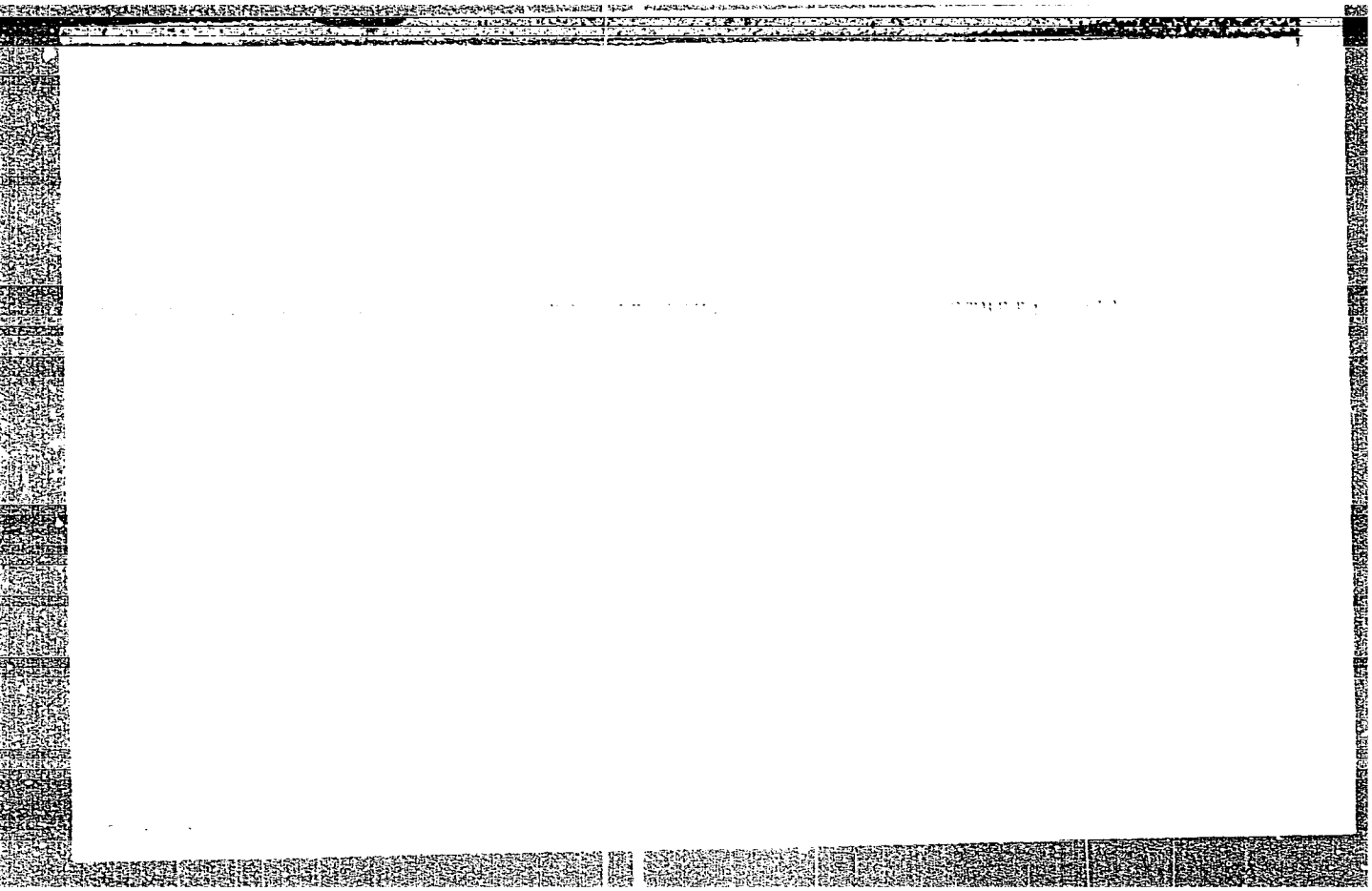

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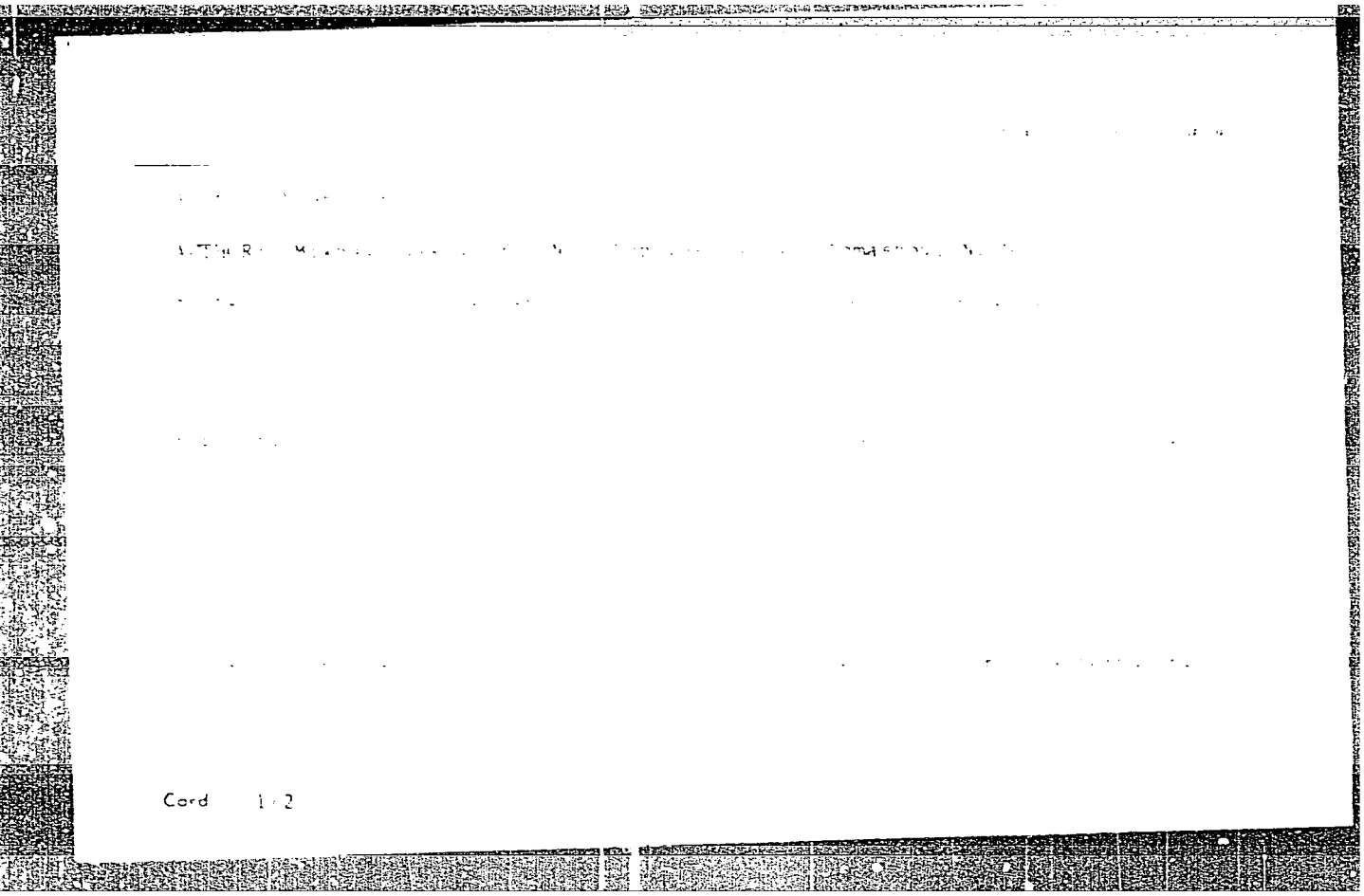

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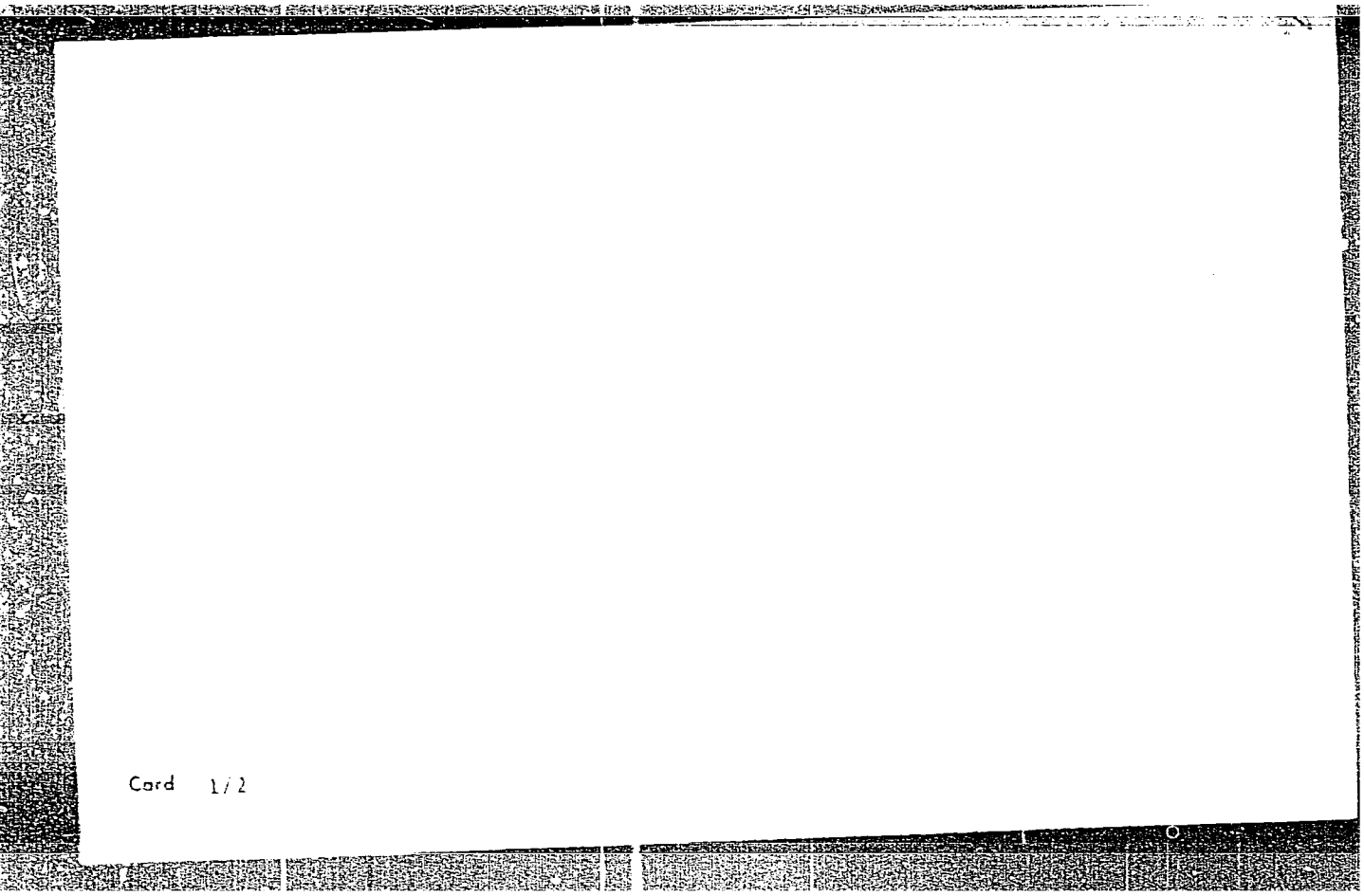

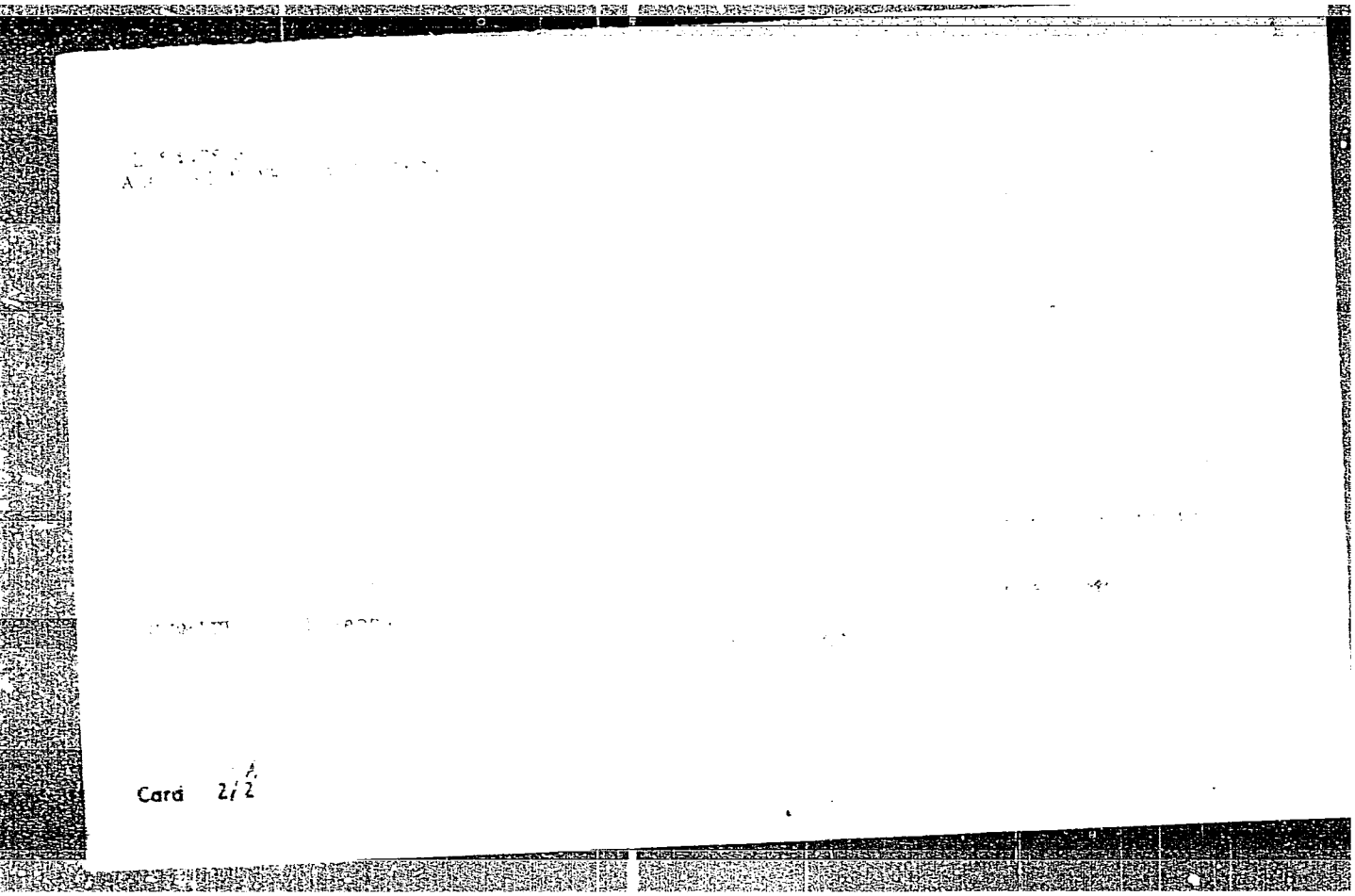

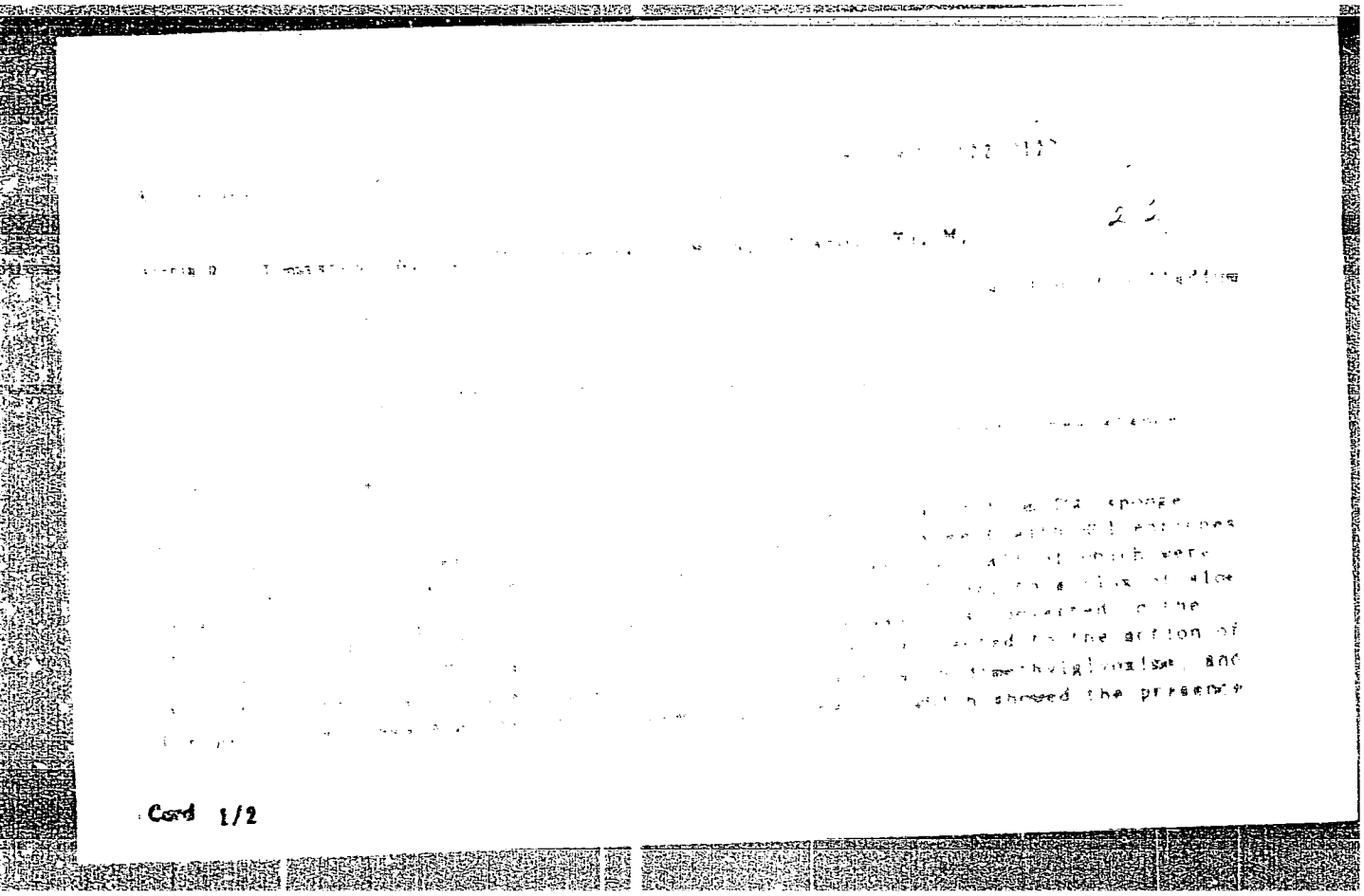

Card 1/2

[illegible] alloy with HCl [illegible] by a factor of at [illegible] calculation based on [illegible] that about 20% [illegible] when treated with HCl. [illegible]

[illegible] khimii, Akademiya nauk SSSR (Institute of [illegible] nauchno-issledo- [illegible] promyshlennosti (State [illegible] Industry)

SUBMITTED: 15Sep64

SUB CODE: [illegible]

NO REF SOV: 005

OTHER: 000

Card 2/2

TOMASHOV, N.D.; STRUKOV, N.M.

Effect of alternating current frequency on the electrochemical and corrosion behavior of iron in hydrochloric acid. Zhur. fiz. khim. 39 no.2:418-422 F '65. (MIRA 18:4)

1. Institut fizicheskoy khimii AN SSSR.

ACC NR: AT7004173 SOURCE CODE: UR/0000/66/000/000/0221/0226

AUTHOR: Veyler, S. Ya.; Petrova, N. V. Zalivalov, F. P.; Tomashov, N. D.; Likhtman, V. I. (Deceased)

ORG: none

TITLE: Effect of anodizing on friction in hot and cold drawing of aluminum

SOURCE: AN SSSR. Institut fizicheskoy khimii. Korroziya i zashchita konstruktsionnykh splavov (Corrosion and protection of structural alloys) Moscow, Izd-vo Nauka, 1966, 221-226

TOPIC TAGS: METAL drawing, ~~aluminum~~ cold drawing, ~~aluminum~~ anodic oxidation, aluminum drawing lubricant, DRAWN ALUMINUM, ALUMINUM OXIDE, METAL FILM

ABSTRACT: The role of oxide films in cold and hot drawing of aluminum has been investigated. It was found that aluminum-oxide films formed on the surface of specimens by long exposure to the atmosphere at 20—300°C did not affect the process of drawing. However, aluminum-oxide films formed by anodizing prevented the sticking of metal to the die and decreased the resistance to drawing. Oxide film, 10 μ thick, decreased the cold drawing resistance from 600 to 210 kg, and the hot-drawing resistance at 300°C from 200 to 150 kg. Anodizing was particularly beneficial in hot drawing: without lubrication it was impossible to draw aluminum even at 1% reduction, but anodized aluminum was hot drawn with up to 13—15% reduction.

SUB CODE: 13/ SUBM DATE: 27Sep66/ ORIG REF: 007/

Card 1/1 UDC: none

ACC NR: AM5026681 Monograph UR/

Tomashov, N. D.; Al'tovkiy, R. M.

Corrosion and the protection of titanium (Korrosiya i zashchita titana) Moscow, Mashgiz, 63. 0167 p. illus., biblio., tables. Errata slip inserted. 4,500 copies printed.

TOPIC TAGS: titanium, titanium alloy, titanium compound, corrosion, corrosion resistance, corrosion resistant alloy, corrosion resistant metal, electrochemical analysis, corrosion protection, metal coating, protective coating, metal stress, electrolyte

PURPOSE AND COVERAGE: The book is based on data published throughout the world for the past decade. It also includes experimental research conducted by the authors on the corrosion and electrochemical properties of titanium and the search for new titanium alloys with greater corrosion resistance. It presents data on the electrochemical properties, passivity and corrosion resistance of titanium and its alloys. It examines the fields in which titanium and its alloys can be applied in modern technology. The book is intended for scientific and engineering-technical workers of research institutes and plant laboratories, and also all people interested in the problems of the corrosion and the protection of metals and in the development and application of corrosion-resistant titanium alloys or the arrangement of further scientific research in this field. The book may also be useful for students of metallurgical, chemical and technological higher educational institutions.

Card 1/2

ACC NR: AM5026681

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SUB CODE: 11/ SUBM DATE: 16Aug63/ ORIG REF: 092/ OTH REF: 111

Card 2/2

(N)

ACC NR: AM5027753 Monograph UR/

Tomashov, Nikon Danilovich; Chernova, Galina Prokof'yevna

Passivity and the protection of metals from corrosion (Passivnost' i zashchita metallov ot korrozii) Moscow, Izd-vo "Nauka", 1965, 207 p. illus., biblio. (At head of title: Akademiya nauk SSSR. Institut fizicheskoy khimii) Errata slip inserted. 6000 copies printed.

TOPIC TAGS: corrosion, corrosion protection, passivation, metal passivation, passivator, anodic protection, cathodic protection

PURPOSE AND COVERAGE: This monograph is intended for scientists, engineers and technicians concerned with corrosion protection and problem of metal and alloy passivation. The authors summarize their investigations of metal and alloy passivation and review the most recent published data on this problem. The modern theory of metal passivation, the kinetics of the passivation process, the structure of passive layers, and the methods of passivation investigation are discussed.

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Card 1/2 UDC: 620.197

ACC NR: AM5027753

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SUB CODE: 11/ SUBM DATE: 14Jul65/ ORIG REF: 012/ OTH REF: 122/

Card 2/2

L 04775-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/WB

ACC NR: AP6025717 SOURCE CODE: UR/0365/66/002/004/0429/0435

AUTHOR: Tomashov, N. D.; Matveyeva, T. V.

ORG: Institute of Physical Chemistry Academy of Sciences SSSR (Institut fizicheskoy khimii Adademiya nauk SSSR

TITLE: Corrosion and electrochemical behavior of vanadium in acid solutions

SOURCE: Zashchita metallov, v. 2, no. 4, 1966, 429-435

TOPIC TAGS: vanadium, corrosion rate, electrochemistry

ABSTRACT: The rate of corrosion of vanadium in different concentrations of hydrochloric, sulfuric and phosphoric acid solutions at 25° and 100° and the electrochemical behavior of vanadium in sulfuric acid were determined. The rate of vanadium corrosion in naturally aerated distilled water at 25° increases with time, amounting to 0.025 gm/m^2 per hr in 300 days. In deaerated water the rate is practically nil indicating that atmospheric oxygen dissolved in water is the cause of corrosion. Vanadium is very resistant to corrosion in any concentration of phosphoric acid at 25°. At 100° the corrosion rate increases with increase in acid concentration: vanadium is relatively resistant to 10%

Card 1/2 UDC: 620.193.41:669.292

ACC NR: AP6025717 O

phosphoric acid but corrodes rapidly in solutions of over 60% concentration. The rate of vanadium corrosion increases rapidly with increase in hydrochloric acid concentration. At 25° it has little corrosion resistance to hydrochloric acid solutions of over 30% concentration; at 100°, over 10% solutions. The corrosion rate-acid concentration curves for vanadium in sulfuric acid go through a maximum at 80% acid concentration. Vanadium has little resistance to 60-90% sulfuric acid solutions at 25°; at 100° its rate of corrosion is 2 orders greater than at 25° and it has little resistance to sulfuric acid solutions of over 20%. Passivation of vanadium in acid media is relatively low. In 40% sulfuric acid the passivation potential is + 0.75 v, passivation current 400 ma/cm^2; in 80% acid, 0.95 v at 8 ma/cm^2. Overpassivation, with formation of the pentavalent vanadium ion, develops immediately after the onset of passivity. Orig. art. has: 3 figures and 3 tables.

SUB CODE: 11,07/ SUBM DATE: 13Aug65/ ORIG REF: 003/ OTH REF: 002

L 47368-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/WB
ACC NR: AR6028440 SOURCE CODE: UR/0137/66/000/005/I080/I080

42
B

AUTHOR: Tomashov, N. D.; Matveyeva, T. V.

16 27 27

TITLE: Corrosion and electrochemical behavior of vanadium in sulfuric acid solutions

SOURCE: Ref. zh. Metallurgiya, Abs. 5I555

REF SOURCE: Sb. Korroziya met. i splavov. No. 2. M., Metallurgiya, 1965, 21-28

TOPIC TAGS: corrosion, vanadium, anodic polarization, passivation

ABSTRACT: The curves of the vanadium corrosion rate expressing its dependency on sulfuric acid concentration pass through a maximum at 80% of the latter's concentration. At a 25% concentration, the corrosion rate of vanadium is low and occurs with oxygen depolarization. In 60—80% solutions of H_2SO_4, it is followed by oxygen-hydrogen depolarization. Passivation of vanadium with anodic polariza-

Card 1/2 UDC: 669.292:620.193

L 47368-66
ACC NR: AR6028440

tion occurs at a 0.75 v potential and a D_a of 400 m amp/cm^2 in a 40% concentration of H_2SO_4. During corrosion in a 20% concentration of H_2SO_4 without the application of current, vanadium dissolves as V^{3+}. During the anodic dissolution of vanadium in 40—80% solution at a 0.55—0.95 v potential, it dissolves as V^{4+}; in an 80% solution of sulfuric acid at a potential greater than 1.4 v, it dissolves as V^{5+}. [Translation of abstract] [FM]

SUB CODE: 13/

Card 2/2 afs

L 34423-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/WB

ACC NR: AP6003318 SOURCE CODE: UR/0365/66/002/001/0032/0037

AUTHOR: Tomashov, N. D.; Ivanov, Yu. M.

ORG: State Scientific-Research and Planning Institute of the Rare-Metal Industry, AN SSSR (Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometalli-cheskoy promyshlennosti AN SSSR); Institute of Physical Chemistry (Institut fizicheskoy khimii)

TITLE: Effect of palladium on the corrosion resistance of titanium

SOURCE: Zashchita metallov, v. 2, no. 1, 1966, 32-37

TOPIC TAGS: titanium, titanium alloy, corrosion resistance, palladium

ABSTRACT: An investigation was made of the corrosion resistance of non-alloyed Ti and Ti containing 0.01, 0.05, 0.1, 0.2, and 0.5% Pd in HCl (5-30% concentrations at 25C, 50C, and at boiling temperature), H_2SO_4 (10-80% concentrations at 25C, 50C, and at boiling temperature), and HCOOH (85% concentration at boiling temperature). The results given in the table, showed that there was no lower boundary of Pd concentration below which the passivation of Ti ceased to exist. The necessary concentration of Pd in the Ti-Pd alloy depended on the corrosive activity of the medium. For instance, the addition of $\leq$ 0.05% Pd increased the corrosion resistance of Ti in an 85% solution of HCOOH at boiling temperature and in $\leq$ 10% solutions of HCl at temperatures $\leq$ 50C. The

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ACC NR: AP6003318

same addition of Pd decreased considerably the corrosion resistance of Ti in more corrosive media. The alloy Ti + 0.2% Pd, which has a sufficiently high resistance to corrosion in all the media investigated except 80% H_2SO_4 solution, should be considered the most universal. The increase of the Pd content to $\leq$0.5%, as a rule, had little effect on the corrosion resistance of Ti and evidently is not justified economically. It was found that Pd, added to Ti, decreased the overvoltage of the cathode reaction and displaced the stationary potential of Ti to more positive values. This resulted in an increase in the rate of dissolution in the active region. The larger additions of Pd provided for a transition into the region where Ti is partly or fully passive. The small deceleration of the anodic process observed during the addition of Pd was related to the mechanical effect of a part of the Ti surface. The addition of 0.2% Pd to the alloy OT4, which is widely used in structures, resulted in the formation of an alloy combining elevated mechanical properties with corrosion resistance. Orig. art. has: 3 fig. and 1 table.

SUB CODE: 11, 13/ SUBM DATE: 23May65/ ORIG REF: 005/ OTH REF: 002

Card 2/2 BLG

L 28396-66 EWT(m)/EWA(d)/EWP(t) IJP(c) JD/HW/JG/WB/GD

ACC NR: AT6013783 (N) SOURCE CODE: UR/0000/65/000/000/0007/0013

AUTHOR: Chernova, G. P. (Candidate of chemical sciences); Tomashov, N. D. (Doctor of chemical sciences; Professor) 63 62 B+1

ORG: none

TITLE: Effect of alloy elements on the anodic dissolution and passivation of stainless steels 16

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2, Moscow, Izd-vo Metallurgiya, 1965, 7-13

TOPIC TAGS: chromium steel, stainless steel, corrosion, electrochemistry, nickel, molybdenum, rhenium, passivator additive/Kh25 chromium steel

ABSTRACT: The article deals with a systematic investigation of the effect of the treatment of chromium steel with 0.5, 1, 2 and 3% wt. Ni, Mo and Re on its corrosion and electrochemical behavior in a 1N solution of H_2SO_4 at 25, 50 and 75°C. It is shown that in the presence of as little as 0.5% of an alloy element the corrosion rate of the steel decreases sharply, particularly when Re is used as the alloy element. Increasing the proportion of the alloy element to 3%, however, does not markedly further reduce the corrosion rate. The alloy elements (Ni, Mo, Re) greatly increase the proneness of steel to passivation: they reduce the passivation current by a factor of 6-12; at 75°C the passivation potential gets displaced by ~0.1 v in the positive direction and the anode current in the passive region decreases 1.5-3 times. The effect of the alloy elements on the rate of anodic dissolution indicates

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that Ni and Mo inhibit the process of anodic dissolution but exert virtually no effect on the cathodic process of hydrogen depolarization. By contrast, Re augments the rate of anodic dissolution but very greatly facilitates the cathodic process, reducing the hydrogen overvoltage. Thus, Kh25 chromium steel treated with Re, when its potential is displaced in the negative direction, displays a higher rate of dissolution than Re-free Kh25 steel in the presence of the same current potentials (Fig. 1).

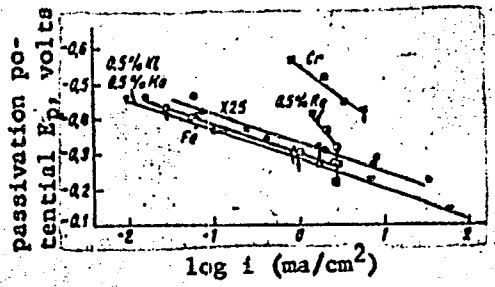

Fig. 1. Anode curves (region of active dissolution) for Kh25 chromium steel and for steels with 0.5% Ni, 0.5% Mo and 0.5% Re, as well as for pure Fe and Cr in 1N H_2SO_4 solution at 25°C:

↓- dissolution rates in the presence of stationary potentials (without polarization)

L 28396-66

ACC NR: AT6013763

This gives reason to believe that Ni and Mo increase the passivity of the alloy by inhibiting the anodic process of dissolution while Re enhances the effectiveness of the cathodic process and facilitates passivation by displacing the alloy's potential in a more positive direction than that of the passivation potential. Thus, Re is a cathodic additive, analogous to Pd or Pt. This elucidation of the effect of alloy elements on the kinetics of electrochemical processes warrants the conclusion that it is possible to develop alloys with a higher corrosion resistance by additionally treating the ternary alloys Fe-Cr-Ni or Fe-Cr-Mo with effective cathodic additives -- Re, Pd or Pt. Orig. art. has 7 figures and 1 table.

SUB CODE: 07,11,07/ SUBM DATE: 19Jul65/ ORIG REF: 004/ OTH REF: 005

Card 3/3

L 28394-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/WB/GD

ACC NR: AT6013785 (N) SOURCE CODE: UR/0000/65/000/000/0021/0028

AUTHOR: Tomashov, N. D. (Doctor of chemical sciences, Professor); Matveyeva, T.V. 49 B+1

ORG: none

TITLE: Electrochemical and corrosion behavior of vanadium in sulfuric acid solutions 16 27 27

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2, Moscow, Izd-vo Metallurgiya, 1965, 21-28

TOPIC TAGS: corrosion, electrochemistry, vanadium, sulfuric acid, passivator additive

ABSTRACT: Since the treatment of stainless steels with even minute amounts of V (1-3%) greatly enhances their passivability and corrosion resistance, obtaining more accurate information on the corrosion and electrochemical properties of V itself is of great interest. In this connection, the authors investigated the corrosion of 1 and 0.12 mm thick strips of V in H_2SO_4 solutions of various concentrations (0-100%) and temperatures. The corrosion was determined according to the weight loss of the specimens. For their electrochemical tests the specimens, following their vacuum annealing at 875°C for 1 hr, were provided with a welded-on contact of constantan wire. Findings: Up to a 40% concentration of H_2SO_4 vanadium remains relatively

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corrosion resistant over the test time (30 days). Increasing the concentration of the acid above 40% leads to a sharper rise in the corrosion rate of V, particularly when the concentration is 70-80%; above 80% the corrosion rate decreases sharply (Fig. 1). An investigation of the kinetics of corrosion of V at 25°C for 40 days in

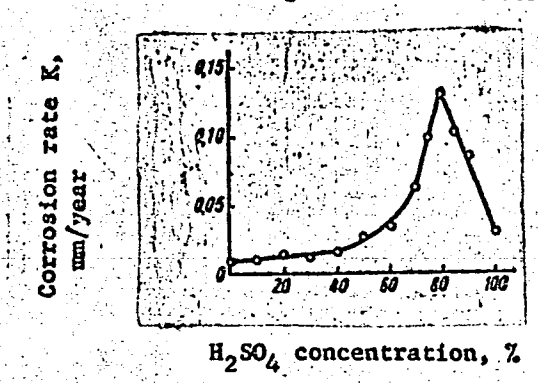

Fig. 1. Corrosion rate of vanadium as a function of H_2SO_4 concentration at 25°C and test time (30 days)

20, 40 and 80% H_2SO_4 solutions showed that V corrodes with almost purely oxygen depolarization. The passivation of V in a 40% solution of H_2SO_4 occurs in the presence of an 0.75-v potential and a current density of 400 ma/cm^2. The hydrogen overvoltage

L 28394-66

ACC NR: AT6013785

for V in 40 and 80% H_2SO_4 solutions is 0.25 v for a current density of 10 ma/cm^2. During corrosion of V in a 20% solution of H_2SO_4 without application of current (in the presence of an 0.24-v normal corrosion potential of V), V passes over into the solution in the form of $V^{\leq 3+}$. During anodic dissolution of V in 40 and 80% solutions of H_2SO_4 in the presence of potentials of from 0.55 to 0.95 v V passes over into the solution in the form of V^{4+} and in 80% H_2SO_4, at potentials exceeding 1.4 v, in the form of V^{5+}. Orig. art. has: 11 figures.

SUB CODE: 07, 11, SUBM DATE: 19Jul65/ ORIG REF: 003/ OTH REF: 002

Card 3/3

L 30367-66 EWT(m)/EWP(t)/ETI IJP(c) JD/WB

ACC NR: AT6012381 SOURCE CODE: UR/0000/65/000/000/0130/0137

AUTHORS: Tomashov, N. D.; Modestova, V. N.; Plavich, L. A.; Averbukh, A. M. 41 40 B+1

ORG: none

TITLE: The effect of hydrogen absorption on the electrochemical behavior of titanium 27

SOURCE: Soveshchaniye po metallokhimii, metallovedeniyu i primeneniyu titana i yego splavov, 6th. Novyye issledovaniya titanovykh splavov (New research on titanium alloys); trudy soveshchaniya. Moscow. Izd-vo Nauka, 1965, 130-137

TOPIC TAGS: titanium, cathode polarization, anodic oxidation, sulfuric acid, corrosion resistance, electrode potential, hydrochloric acid / VT1 titanium

ABSTRACT: The effect of preliminary cathode polarization on the subsequent anodic dissolution and anodic oxidation of titanium is studied. The specimens were prepared from VT1 titanium with the impurities (wt %): 0.03 Fe, 0.03 Si, 0.05 C, 0.06 Cl, 0.03 N, and 0.1 O. The specimens were annealed for 2 hrs at 800C. Potentiostatic curves were plotted for titanium and titanium with a hydride layer in a 3-N solution of H_2SO_4 (see Fig. 1). Anodic dissolution of titanium with a hydride layer was found to occur with greater retardation than that of titanium without a layer.

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L 30367-66

ACC NR: AT6012381

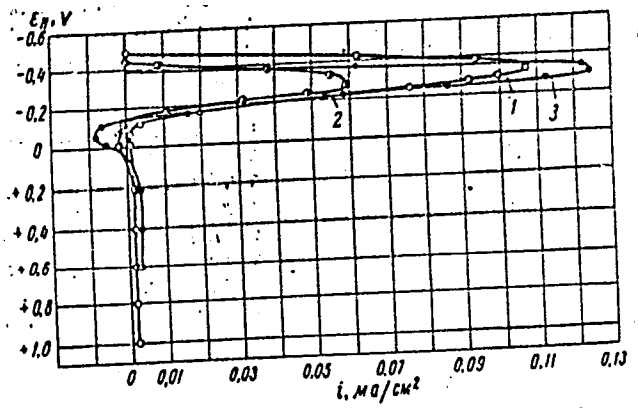

Fig. 1. Anodic potentiostatic curves plotted in 3-N solution of H_2SO_4: 1 - titanium; 2 - titanium with cathode polarization for 1 hr with a current of 5 mA/cm^2; 3 - same, after 18 hrs of cathode polarization.

In the range of active anodic dissolution, the surface of the titanium with and without a hydride layer was oxidized. In anodization of titanium with a hydride layer, an oxide is formed on the hydride layer. In anode oxidation, the titanium ions are chiefly diffused from the metal through the hydride layer. The relative stability of titanium in solutions of acids where corrosion occurs with hydrogen depolarization is due to hydride-oxide passivity. Orig. art. has: 1 table and 5 figures.

SUB CODE: 11/ SUBM DATE: 02Dec65/ ORIG REF: 010/ OTH REF: 006

Card 2/2 cc

L 28534-66 EWT(m)/EWP(t)/ETI IJP(c) JH/JD/WB/GD

ACC NR: AT6013798 (N) SOURCE CODE: UR/0000/65/000/000/0191/0199

51
49
B+1

AUTHOR: Tomashov, N. D.; Zalivalov, F. P.

ORG: none

TITLE: Electric insulation properties of thick anodic oxide films on aluminum and its alloys

27

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2 Moscow, Izd-vo Metallurgiya, 1965, 191-199

14

TOPIC TAGS: test rig, electric insulation, dielectric breakdown, oxide formation, anodic oxidation, anodization/UPU-1 test rig, AMts aluminum alloy

ABSTRACT: The article deals with the effect of certain factors (the composition of Al alloys, the density of anodic current, preheating of the film, and nature of disruptive current) on the breakdown voltage U_{breakd} of thick (33-75 μ) anode films. The tests were performed at room temperature with the aid of a specially developed device (Fig. 1) attached to a standard UPU-1 test rig for determining dielectric strength with the aid of direct and alternating currents (output voltage limits: 0-1, 0-3 and 0-10 kv). Findings: the thick anodic oxide films produced on Al and its

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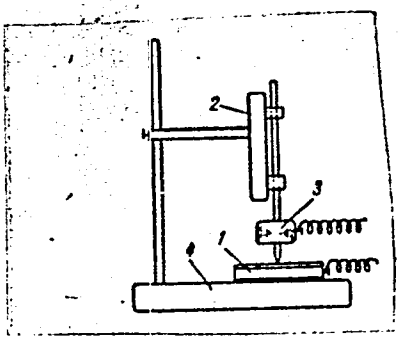

Fig. 1. Device for electric contacting with the surface of the anodic film:

1 - specimen with anodic film and electric contact; 2 - plexiglas probe holder; 3 - counterweight on brass probe with electric contact; 4 - plexiglas rack base

ACC NR: AT6013798

alloys display high electric insulating properties. In certain cases the breakdown voltage of these may reach 2000-2500 v. Generally, the breakdown voltage varies with every type of alloy. Thus, for all plastically worked alloys (except Duraluminum and AMts) the absolute values of U_{breakd} exceed 1000 v in the presence of 40-70 μ thick films, whereas U_{breakd} for cast Al alloys (on which the films obtained are 50-65 μ thick) barely exceed 500 v, i.e. are about one-half as high. The markedly lower values of U_{breakd} recorded for cast alloys, as opposed to homogeneous plastically worked alloys, may be attributed to the presence in the anodic film of Si crystals (since cast Al alloys contain larger amounts of Si) which, during anodizing, pass from the alloy to the film. U_{breakd} is also affected by the geometry of the specimen: on convex surfaces U_{breakd} is higher than on concave surfaces; this is due to the cracks on the film surface, which are greater on a concave surface than on a convex one. Likewise, U_{breakd} also increases with increasing preheating temperature of the film. The use of AC in breakdown tests also reduces the electric insulating properties of the films. The decisive factor affecting U_{breakd} of the film is its thickness and structure: U_{breakd} increases with film thickness; the anodizing conditions (electrolyte composition, density and nature of current) affect U_{breakd} only to the extent to which they affect the thickness and structure of the film. Orig. art. has: 6 figures, 2 tables

SUB CODE: 11, 07 SUBM DATE: 19Jul65/ ORIG REF: 007/ OTH REF: 003

Card 3/3 CC

MIKHAYLOVSKIY, Yu.N.; LEONOV, V.V.; TOMASHOV, N.D.

Measuring the resistance of insulating protective coatings immersed in an electrolyte. Zashch. met. 1 no.5:577-582 S-O '65. (MIRA 18:9)

1. Institut fizicheskoy khimii AN SSSR.

L 1652-66 EWT(m)/EPF(c)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) LJP(c) BW/JD/RW/DJ

ACCESSION NR: AP5021583 UR/0286/65/000/013/0055/0055
665.5

52
B

AUTHOR: Veyler, S. Ya.; Petrova, N. V.; Zalivalov, F. P.; Likhtman, V. I.; Tomashov, N. D.

TITLE: Method for applying lubricating film. Class 23, No. 172445

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 55

TOPIC TAGS: lubrication, film lubrication, solid lubricant

ABSTRACT: This Author Certificate introduces a method for hot working aluminum and its alloys in which the anodized layer serves as the lubricant. [AZ]

ASSOCIATION: none

SUBMITTED: 16Jul62 ENCL: 00 SUB CODE: IE, MM

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4093

Card 1/1 DP

GLAZOVA, V.V.; KORNIKOV, I.I.; MODESTOVA, V.N.; TOMASHOV, N.D.

Corrosion behavior of alloys of the titanium - oxygen system in sulfuric acid solutions. Dokl. AN SSSR 165 no.1:136-139 N '65. (MIRA 18:10)

1. Institut metallurgii im. A.A.Baykova i Institut fizicheskoy khimii AN SSSR. 2. Submitted March 26, 1965.

L 34394-66 EWT(m)/EWP(t)/ETI IJP(c) JB/JG/WB

ACC NR: AP6003321 SOURCE CODE: UR/0365/66/002/001/0057/0062

37
B

AUTHOR: Tomashov, N. D.; Matveyeva, T. V.

ORG: Institute of physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Corrosion and electrochemical behavior of rhenium 14 27

SOURCE: Zashchita metallov, v. 2, no. 1, 1966, 57-62

TOPIC TAGS: rhenium, corrosion resistance, electrochemical analysis, electric potential, sulfuric acid, hydrochloric acid, phosphoric acid

ABSTRACT: The rate of Re corrosion (Re contained 0.0075 K, 0.0009 Na, < 0.004 Ca, 0.001 Fe, 0.0002 Cu, 0.0006 Ni, 0.00015 Al, and 0.0007% Mo) was studied at 25C and 100C in solutions of H_2SO_4, HCl, H_3PO_4, KOH, HNO_3, H_2O_2, and NaCl at various concentrations and in distilled H_2O. In the presence of atmospheric oxygen and at 25C, the rate of corrosion was very small (<0.0001 g/m^2-hr) in nonoxidizing acids (H_2SO_4, HCl, and H_3PO_4). At 100C in the same media, the Re corroded with a small rate of corrosion (<0.016 g/m^2-hr). In distilled water in the presence of atmospheric oxygen and at 25C, the corrosion was also very small (<0.0001 g/m^2-hr), but at 100C it was higher than in nonoxidizing acids and similar to that in NaCl solutions (0.05 g/m^2-hr). Alkalies reacted with Re more actively than nonoxidizing acids: the rate of Re dissolution in 5% and 10% KOh was 0.015 g/m^2-hr. The overvoltage of H liberation had a low

UDC: 669.849

Card 1/2

L 34394-66

ACC NR: AP6003[illegible]

value in nonoxidizing acids: 0.1 v in 40% H_2SO_4 solution at a current density of 1 milliamp/cm^2 and at 25C. The ability of Re for passivation was very small. The Re was passive (anode current <0.001 milliamp/cm^2) in nonoxidizing acids at nearly stationary potentials ($\leq$ 0.85 v). A certain degree of passivation of Re was observed within the same range of potentials (0.4 - 0.8 v) in NaCl and KOH solutions, but at much higher current density (~1 milliamp/cm^2). In oxidizing media ($\geq$0.05% solutions of H_2O_2 and HNO_3 at concentrations >10%), the Re was very unstable. A rate of Re corrosion of the order of 200 g/m^2-hr was observed in $\geq$40% HNO_3. The stationary potential of Re in these solutions was very positive ($\leq$ +1 v). This affected a high rate of corrosion because of overpassivation. The corrosion of Re in the solutions investigated had an electrochemical nature and the corrosion behavior of Re was controlled by the kinetics of anodic and cathodic processes under the conditions studied. Orig. art. has: 7 fig. and 1 table.

SUB CODE: 13/ SUBM DATE: 31Mar65/ ORIG REF: 003/ OTH REF: 004

Card 2/2 BLG

L 39982-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/WB (N)

ACC NR: AP6021072 SOURCE CODE: UR/0365/66/002/002/0122/0126

AUTHOR: Chernova, G. P.; Volkov, L. N.; Tomashov, N. D.

ORG: Institute of Physical Chemistry, Academy of Sciences SSSR (Institut fizicheskoy khimii Akademii nauk SSSR)

TITLE: Study of rhenium and copper buildup on stainless steel surfaces during the process of active dissolution

SOURCE: Zashchita metallov, v. 2, no. 2, 1966, 122-126

TOPIC TAGS: stainless steel, cathode polarization, rhenium, copper, alloying, surface condition, platinum, electrochemistry / Kh25 steel

ABSTRACT: The effects of Cu and Re buildup on stainless steel surfaces was studied during passivation in 1N H_2SO_4 at 25°C. Charging curves are shown in which the potential is given as a function of time for a current density of 300 ma/cm^2. The amount of electricity needed to passivate the steel (Q) was proportional to the passivation time and depended on the preliminary treatment of the surface by cathodic or anodic polarization and varying self dissolution time. After preliminary cathodic polarization, Kh25 steel and Kh25 steel + 0.5% Re had similar anodic charging curves (passivation time τ=70 msec) indicating similar passivation processes. However, after 20 min of self dissolution in 1N H_2SO_4, Kh25 steel had an increased value of τ=140 msec,

UDC: 620.196

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ACC NR: AP6021072

while Kh25 steel + 0.5% Re had two new potential levels with the final level stopping at 140 msec. For Kh25 steel, the increase in dissolution time from 0 to 40 min resulted in an increase in Q from 23 to 65 mcoul/cm^2. In the Re alloyed steel, Q decreased from 23 to 5 mcoul/cm^2 at the first potential level and increased for the two new levels; at a self dissolution time of 40 min this steel was self passivated. Anodic passivation was performed on pure Re, Kh25 steel plated with Re, pure Cu and Kh25 + 2.56% Cu steel. For pure Re, the potential remained constant at +1.2 v, corresponding to the solution of Re and the formation of ReO_4^-. By comparing these tests with similar tests on palladium (which readily adsorbs hydrogen during cathodic polarization) it was established that the second step in the anodic curves for Kh25 + 0.5% Re was due to the ionization of adsorbed hydrogen. The electrochemical reactions were $Re + 4H_2O = ReO_4^- + 8H^+ + 7e$ for a solution of Re and $Cu = Cu^{++} + 2e$ for Cu. Calculations were made for the theoretical estimate of the Re and Cu concentrations at the steel surface based on the potential levels. Good agreement was obtained for the dependence between the time of preliminary anodic solution in the active state and the quantity of Re or Cu accumulated on the surfaces of the steel. Orig. art. has: 5 figures, 1 table, 2 formulas.

SUB CODE: 07,11/ SUBM DATE: 15May65/ ORIG REF: 007/ OTH REF: 007

Card 2/2 11b

L 34356-66 EWT(m)/EWP(t)/ETI IJP(c) WVH/JD/WB

ACC NR: AP5027845 SOURCE CODE: UR/0020/65/165/001/0136/0139

AUTHOR: Glazova, V. V.; Kornilov, I. I.; Modestova, V. N.; Tomashov, N. D.

ORG: Institute of Metallurgy im. A. A. Baykov (Institut metallurgii); Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Corrosion behavior in sulfuric acid solution of alloys of the titanium-oxygen system

SOURCE: AN SSSR. Doklady, v. 165, no. 1, 1965, 136-139

TOPIC TAGS: titanium compound, titanium base alloy, corrosion resistance, electrode potential, sulfuric acid

ABSTRACT: Titanium has a large affinity to oxygen and the presence of a Ti compound with oxygen decelerates corrosion considerably. It was of interest, therefore, to study the behavior of Ti alloys with oxygen. The Ti-O alloys were prepared in an arc furnace with a noncombustible W electrode in an Ar atmosphere. The initial materials were: Ti iodide (99.9% Ti) and Ti oxide (99.93% TiO_2). The oxygen was added in the form of an alloy containing 15.8% oxygen and prepared by melting in the arc furnace tablets compressed from Ti and TiO_2. The Ti-O alloys, containing 1, 5, 9, 10, 11, 12, 13, 15, 16, 17, 20, 25, and 36 at% oxygen, were thus prepared. The study of corrosion resistance and stationary electrode potential of the Ti-O alloys was made in 40% and 70% H_2SO_4, i.e. under conditions of the strongest possible corrosion of Ti. The curves

Card 1/2 UDC: 620.197.3

L 34356-66
ACC NR: AP5027845

were plotted on the changes of the corrosion rate and the electrode potential as a function of the oxygen content in the alloy. All alloys in a 70% H_2SO_4 solution had a higher corrosion resistance than Ti. Two minimums at 5 and 15 at% oxygen and 2 maximums at 9 - 13 and ~ 20 at% oxygen were observed on the corrosion rate curve. The corrosion rate steadily decreased in alloys containing > 20 at% oxygen. The alloys with minimal corrosion (5 and 15 at% oxygen) corresponded to the α-solid solution of oxygen in Ti and Ti_6O, respectively. In 40% H_2SO_4 solutions, the corrosion rate curve was lower than that in 70% H_2SO_4, but it had the same character and maximums and minimums with about the same concentrations of oxygen. The solid solution of Ti with 5 at% oxygen, the compounds Ti_6O and Ti_3O (alloy with 25at% oxygen), and the alloy with 36 at% oxygen were strongly resistant to corrosion both in 40% and 70% H_2SO_4 solutions. The curves showing the dependence of the stationary potential on the content of oxygen in the Ti-O alloys were to a certain degree similar to the corrosion rate curves, although they were not exactly the same, because the stationary potential depended both on anodic and cathodic processes. The most interesting fact was that an addition of $\leq$ 5% oxygen increased the resistance of Ti to corrosion by several times. The paper was presented by Academician A. A. Bochvar 26 Mar 1965. Orig. art. has: 4 fig.

SUB CODE: 13/ SUBM DATE: 16Mar65/ ORIG REF: 017/ OTH REF: 001

Card 2/2 ULR

TOMASHOV, N.D.; IVANOV, Yu.M.

Effect of palladium on the corrosion resistance of titanium. Zashch. met. 2 no.1:32-37 Ja-F '66. (MIRA 19:1)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti AN SSSR i Institut fizicheskoy khimii AN SSSR. Submitted May 23, 1965.

ZVORYGIN, F.V.; TOMASHOV, V.M.; KHOKHEL', O.A.

Generator of random voltages of subsonic frequencies with any distribution law and a controlled spectrum. Avtom. i prib. no.4:74-78 O-D '63. (MIRA 16:12)

1. Institut kibernetiki AN UkrSSR.

TOMASHOV, Yu. (g.Alma-Ata)

Restoration of a television picture tube. Radio no.4:64 Ap '61.
(MIRA 14:7)

(Television--Picture tubes)

IOFA, Z.A.; TOMASHOVA, G.N. (Moskva)

Simultaneous action of sulfides and organic compounds on the acid corrosion and brittleness of iron. Zhur.fiz.khim. 34 no.5: 1036-1043 My '60. (MIRA 13:7)

1. Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova.
(Iron--Corrosion) (Sulfides) (Organic compounds)

AL'TOVSKIY, R.M.; TOMASHOVA, N.N.

Electrochemical and corrosion behavior of titanium and chromium alloys in sufuric acid. Zhur.prikl.khim. 37 no.1:126-131 Ja '64. (MIRA 17:2)

TOMASHOV, Nikolay Nikolayevich; LOGINOVA, Ye.M., otv. red.

[Physics; the program and test paper assignments with methodological instructions for their completion. Methods manual for students specializing in economics in specialized secondary correspondence schools based on 7 grades] Fizika; programma, zadaniia dlia kontrol'nykh rabot s metodicheskimi ukazaniiami po ikh vypolneniiu. Metodicheskoe posobie dlia uchashchikhsia ekonomicheskikh spetsial'nostei zaochnykh srednikh spetsial'nykh uchebnykh zavedenii na baze 7 klassov. Moskva, Gos. izd-vo Vysshaia shkola, 1962. 67 p. (MIRA 18:12)

1. Russia (1923- U.S.S.R.) Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya.

KABANOV, B.N.; KISELEVA, I.G.; ASTAKHOV, I.I.; TOMASHOVA, N.N.

Overvoltage and mechanism of cathodic incorporation of alkali metals into solid electrodes. Elektrokhimiia 1 no.9:1023-1028 S '65. (MIRA 18:10)

1. Institut elektrokhimii AN SSSR.

L 8307-66 EWT(1)/EWT(m)/ETC/EWG(m)/T/EWA(m)-2

ACCESSION NR: AP5022143

UR/0364/65/001/009/1023/1028
541.13

AUTHOR: Kabanov, B. N.; Kiseleva, I.G.; Astakhov, I.I.; Tomashova, N.N.

TITLE: Overvoltage and mechanism of cathode intrusion of alkali metals into solid electrodes

SOURCE: Elektrokhimiya, v. 1, no. 9, 1965, 1023-1028

TOPIC TAGS: alkali metal, cation, intermetallic compound, electrode

ABSTRACT: The discharge of cations of alkali metals, accompanied by the formation of intermetallic compounds according to the reaction $B^{+}+ne+mMe=BMe_m$ (where Me are Ag, Cd, Al, Zn, or Pb, and B^{+} are the ions of alkali metals), was studied recently and called the cathode intrusion of alkali metals into electrodes. The dependence of the rate of this reaction on the potential and structure of electrode material was studied to determine the mechanism of intrusion. The information on the reaction rate was obtained from data on the increase with time of the hydrogen overvoltage. The measurements were made in the 1 and 10 N NaOH electrolyte on pure lead or on the lead and sodium compound produced preliminarily by electrolysis or melting. The hydrogen overvoltage on the lead electrode in the 1 N NaOH

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electrolyte reached the maximum possible value after cathode polarization for 30-60 minutes. The rate of intrusion, because of a rapid liberation of hydrogen, could not be determined directly, and was calculated by extrapolation. The average density of alkaline metal intrusion into pure lead was thus determined as $i_o=10^{-10}$amp /sq cm at $\varphi=-1.3$ v. The reaction rate was measured directly on the lead-sodium electrodes (3.5 - 10% Na): $i_o=10^{-3}$amp /sq cm at $\varphi=-1.3$ v. This large difference in the values of i_o in pure lead and in lead-sodium electrodes was caused by the fact that the intrusion rate increased with the increased number of vacancies in the metal lattice near the surface of electrode. The equilibrium vacancies, generated on the surface of the metallic electrode or diffused from its depth, could provide only for a very small intrusion rate of 10^{-10}amp/sq cm. The larger intrusion rates occured only in the presence of a large number of vacancies in excess of the equilibrium concentration of vacancies. The number of vacancies was large in an alloy structure or in the presence of a large number of defects in the structure of the electrode metal. Changing only the conditions of the electrode surface (adsorption of As, Hg, and Te on the electrode surface, polishing or etching of the electrode) had little effect on the intrusion rate. Orig. art. has: 6 figure and 1 formula.

L 8307-66

ACCESSION NR: AP5022143

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry, Academy of Sciences SSSR)

SUBMITTED: 21Nov64/--Sep65 ENCL: 00 SUB CODE: MM, NP

NO REF SOV: 008 OTHER: 002

Card 3/3

ACCESSION NR: AP4010485 S/0080/64/037/001/0126/0131

AUTHOR: Al'tovskiy, R. M.; Tomashova, N. N.

TITLE: The corrosive and electrochemical behavior of titanium and chromium alloys in sulfuric acid

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 1, 1964, 126-131

TOPIC TAGS: titanium alloys, chromium alloys, non-oxidizing acids, sulfuric acid, anode polarization, inertness, anodic protection, aggressive media, titanium potential, corrosion resistance, over-passivation

ABSTRACT: A detailed study of the corrosive and electrochemical behavior of titanium alloys with chromium in 40% and 70% sulfuric acid revealed that they have a lower stability than unalloyed titanium, and that anodic protection reduces the speed of titanium corrosion hundreds of times, particularly titanium alloyed with chromium. In titanium-chromium alloys anodic release of oxygen is considerably less inhibited than in titanium. The results obtained in these tests

Card 1/2

ACCESSION NR: AP4010485

show that titanium-chromium alloys eventually may prove to be suitable for insoluble anodes in the electrolytic processes of sulfuric acid solutions. When diluted in an active state, corrosion resistance of titanium-chromium alloys are not superior to unalloyed titanium. Titanium-chromium alloys have a smaller region of potential stable passivation than titanium, necessitating more careful control over the potential for anodic protection. It has been established that titanium-chromium alloys are subject to overpassivation as well as secondary passivation in sulfuric acid solutions at high temperatures. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 24May62 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: ML, CH NO REF SOV: 005 OTHER: 001

Card 2/2

KISELEVA, I.G.; TOMASHOVA, N.N.; KABANOV, B.N.

Inclusion of alkaline metals into electrodes studied by the potential - time curve method. Zhur. fiz. khim. 38 no.5: 1188-1194 My '64. (MIRA 18:12)

1. Institut elektrokhimii AN SSSR. Submitted June 1, 1963.

TOMASHKOVA, Yana [Tomaskova, Jana], doktor; PAVLOVA, T.[translator]; KOL'CUNENKO, I.I., red.; ZAMYSHLYAYEVA, I.M., red. izd-va; KHENOKH, F.M., tekhn. red.

[Beauty and health]Krasota i zdorov'e. Moskva, Izd-vo M-va kommun. khoz. RSFSR, 1962. 86 p. (MIRA 15:12)
(BEAUTY, PERSONAL)

ATROSHENKO, V.S.; GLAZOVA, K.S.; MALKEVICH, M.S.; FEYGEL'SON, Ye.M.;
Prinimali uchastiye: KIM, E., studentka; TOMASHOVA, L., studentka;
ROZENBERG, G.G., prof., doktor fiz.-matem.nauk, otv.red.;
PENKINA, N.V., red.izd-va; SUSHKOVA, L.A., tekhn.red.

[Calculation of light intensity in the atmosphere during anisotropic scattering. Part 2] Raschet iarkosti sveta v atmosfere pri anizotropnom rasseianii. Chast' 2. Moskva, Izd-vo Akad.nauk SSSR, 1962. 222 p. (Akademiia nauk SSSR. Institut fiziki atmosfery. Trudy, no.3). [MICROFILM] (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet (for Kim, Tomashova).
(Light—Scattering) (Atmosphere)

TOMASHPOL'SKAYA, V.D.

Age and stratigraphy of sediments in the Igerkul' Basin. Izv. TPI 90:23-30 '58. (MIRA 12:2)

1. Predstavleno professorom doktorom K.V. Raduginym.
(Igerkul' Valley--Geology, Stratigraphic)

SIVOV, A.G.; TOMASHPOL'SKAYA, V.D.

Age of Sanashtykgol archaeocyathid-tribolite complexes in the Sayan-Altai area. Mat.po geol.Zap.Sib. no.61:40-48 '58. (MIRA 12:8)
(Altai Mountains--Paleontology) (Sayan Mountains--Paleontology)

TOMASHPOL'SKAYA, V.D.

Stratigraphy of the Batenevskiy Range. Mat.po geol.Zap.Sib. no.63: 56-65 '62. (MIRA 16:10)

TOMASHPOL'SKIY, A.M.

Problems concerning the use of cathode followers in phantastron circuits. Radiotekhnika 16 no.7:38-45 Jl '61. (MIRA 14:7)
(Cathode followers) (Oscillators, Electric)
(Pulse techniques (Electronics))

S/108/61/000/007/006/007
D204/D305

9,3280

AUTHOR: Tomashpol'skiy, A.M.

TITLE: Certain problems arising from the use of cathode followers in phantastron circuits

PERIODICAL: Radiotekhnika, no. 7, 1961, 38-45

TEXT: In order to reduce the fly-back time it is usual in phantastron circuits to use cathode followers as shown in the circuit in Fig. 2a. The author shows that such a cathode follower introduces additional non-linearities in the output voltage and discusses subsequently methods which, by introducing additional feedback paths, would allow for their compensation. There are two reasons why a cathode follower makes the linearity of the saw-tooth output voltage worse: 1) Its gain $k < 1$ and therefore the overall forward gain of the amplifier is smaller; 2) In generating large saw-tooth voltages (which is usually the case), the voltage between cathode and grid in the cathode follower U_{gk} varies within large limits. Because of this in tube T_2 the non-linearities of the tube characteristics

Card 1/4

Certain problems arising...

become important which in the original phantastron circuit could be neglected. To evaluate the non-linearity of the output voltage it is assumed that the grid characteristic of tube T_2 can be approximated by a curve of the second order, then after several mathematical transfer motions the differential equation

$$\left|\frac{d\Delta U_{ausg}}{dt}\right|_{t=0} = \frac{(\mu E_{a1} + i_0 R_k)}{R_c C} \frac{\kappa}{(\mu\kappa + 1)},$$

$$\frac{d\Delta U_{aus}}{dt}\Big|_{t=T_{ausl}} = \frac{1}{R_c C} \frac{E_{a1}[\mu\kappa - 1 - a\kappa E_{a1}] + \kappa i_0 R_k}{1 + \mu\kappa + 2a\kappa E_{a1}},$$

$$\beta = \frac{E_{a1}[1 + \mu\kappa + a\kappa(1 + 3\mu\kappa)E_{a1} + 2a\kappa^2 i_0 R_k]}{\kappa(\mu E_{a1} + i_0 R_k)(1 + \mu\kappa + 2a\kappa E_{a1})}.$$

is obtained, which gives the rate of change of the outpyt voltage with respect to time and the coefficient of non-linearity β. The latter, after neglecting small terms becomes $\beta \approx \frac{1 + 3\alpha kE_{a1}}{\mu k}$ (10) For $\alpha = 0$, K = 1 (no cathode follower), β takes the form normal for phantastron circuits (Ref. 1: L.A. Meyerovich, L.G. Zelinchenko, Impul'snaya tekhnika, izd. "Sovetskoye radio", 1954). In order to make the additional non-linearity, intro-

Card 2/4

Certain problems arising...

duced by the cathode follower negligible, R_K, which for most triodes = 30 K, should be as large as possible. From various considerations, however, the limiting value of R_K is given by the ratio

$$\frac{R_K}{R_{g1}} < (1 - \xi) \qquad (10a)$$

where ξ is the anode voltage utilization coefficient of the phantastron. The non-linearity of output voltage of a phantastron is inversely proportional to the amplification factor μ, so that pentodes are used. Although their amplification factor is high the decoupling resistance of the screen R_{g2} makes it much lower and in practice $\mu = 100 \div 200$. In practice the arrangement of Fig. 4a is used where R_{a2} is so chosen that the amplification from grid to anode of T_2 is equal to $\frac{1}{\mu}$. In the above circuits the linearity is increased by introducing positive feedback which introduces some instability. This instability may ruin the working conditions of the corrective circuit with changes in tube parameters. Of interest therefore are circuits which achieving linearization stabilize at the same time the tube parameters. The idea behind such circuits

Card 3/4

Certain problems arising...:

is to use a constant current device instead of dropping resistance R_{g1} (Fig. 2a) of tube T_1. Such a circuit is illustrated, the author pointing out that experimental data have fully confirmed the correctness of the basic theoretical considerations. There are 5 figures and 1 Soviet-bloc reference.

SUBMITTED: October 19, 1960 (initially)
February 6, 1961 (after revision)

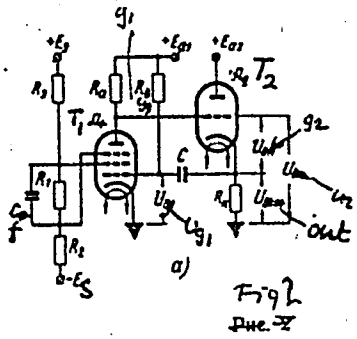

Fig. 2a

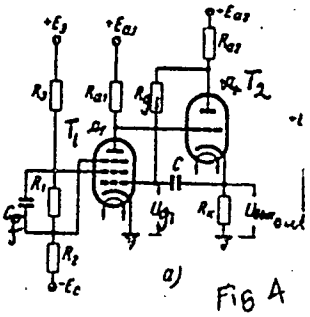

Fig. 4a

S/108/61/000/007/006/007
D204/D305

9,3280

AUTHOR: Tomashpol'skiy, A.M.

TITLE: Certain problems arising from the use of cathode followers in phantastron circuits

PERIODICAL: Radiotekhnika, no. 7, 1961, 38-45

TEXT: In order to reduce the fly-back time it is usual in phantastron circuits to use cathode followers as shown in the circuit in Fig. 2a. The author shows that such a cathode follower introduces additional non-linearities in the output voltage and discusses subsequently methods which, by introducing additional feedback paths, would allow for their compensation. There are two reasons why a cathode follower makes the linearity of the saw-tooth output voltage worse: 1) Its gain $k < 1$ and therefore the overall forward gain of the amplifier is smaller; 2) In generating large saw-tooth voltages (which is usually the case), the voltage between cathode and grid in the cathode follower U_{gk} varies within large limits. Because of this in tube T_2 the non-linearities of the tube characteristics

Card 1/4

Certain problems arising...

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$$\left|\frac{d\Delta U_{out}}{dt}\right|_{t=0} = \frac{(\mu E_{a1} + i_0 R_\kappa)}{R_c C} \frac{\kappa}{(\mu\kappa + 1)},$$

$$\frac{d\Delta U_{out}}{dt}\bigg|_{t=T_{puls}} = \frac{1}{R_c C} \frac{E_{a1}[\mu\kappa - 1 - \alpha\kappa E_{a1}] + \kappa i_0 R_\kappa}{1 + \mu\kappa + 2\alpha\kappa E_{a1}},$$

$$\beta = \frac{E_{a1}[1 + \mu\kappa + \alpha\kappa(1 + 3\mu\kappa) E_{a1} + 2\alpha\kappa^2 i_0 R_\kappa]}{\kappa(\mu E_{a1} + i_0 R_\kappa)(1 + \mu\kappa + 2\alpha\kappa E_{a1})}.$$

is obtained, which gives the rate of change of the outpyt voltage with respect to time and the coefficient of non-linearity β. The latter, after neglecting small terms becomes $\beta \approx \frac{1 + 3\alpha\, kEa1}{\mu k}$ (10) For $\alpha = 0$, K = 1 (no cathode follower), β takes the form normal for phantastron circuits (Ref. 1: L.A. Meyerovich, L.G. Zelinchenko, Impul'snaya tekhnika, izd. "Sovetskoye radio", 1954). In order to make the additional non-linearity, intro-

Card 2/4

Certain problems arising...

duced by the cathode follower negligible, R_K, which for most triodes = 30 K, should be as large as possible. From various considerations, however, the limiting value of R_K is given by the ratio

$$\frac{R_k}{R_{g1}} < (1 - \xi) \qquad (10a)$$

where ξ is the anode voltage utilization coefficient of the phantastron. The non-linearity of output voltage of a phantastron is inversely proportional to the amplification factor μ, so that pentodes are used. Although their amplification factor is high the decoupling resistance of the screen R_{g2} makes it much lower and in practice $\mu = 100 \div 200$. In practice the arrangement of Fig. 4a is used where R_{a2} is so chosen that the amplification from grid to anode of T_2 is equal to $\frac{1}{\mu}$. In the above circuits the linearity is increased by introducing positive feedback which introduces some instability. This instability may ruin the working conditions of the corrective circuit with changes in tube parameters. Of interest therefore are circuits which achieving linearization stabilize at the same time the tube parameters. The idea behind such circuits

Card 3/4

Certain problems arising...:

is to use a constant current device instead of dropping resistance R_{g1} (Fig. 2a) of tube T_1. Such a circuit is illustrated, the author pointing out that experimental data have fully confirmed the correctness of the basic theoretical considerations. There are 5 figures and 1 Soviet-bloc reference.

SUBMITTED: October 19, 1960 (initially)
February 6, 1961 (after revision)

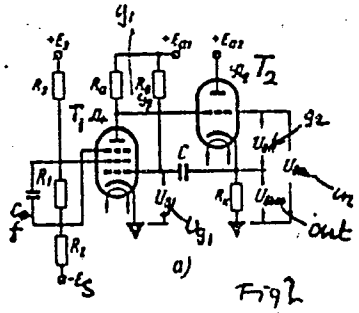

Fig. 2a

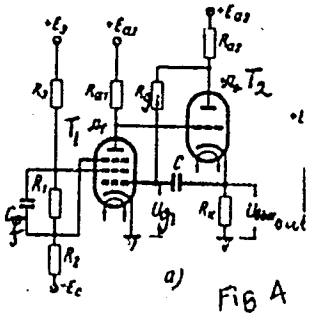

Fig. 4a

Card 4/4

28086
S/181/61/003/009/020/039
B102/B104

24.3500 (1139, 1138)

AUTHORS: Tomashpol'skiy, F. G., and Kholuyanov, G. F.

TITLE: Spectra of recombination radiation in molten SiC p-n junctions

PERIODICAL: Fizika tverdogo tela, v. 3, no. 9, 1961, 2688 - 2693

TEXT: When studying SiC detectors O. V. Losev found that on carrier injection luminescence occurs which he termed "luminescence II". Later on this effect was studied several times and explained as recombination luminescence (electron - hole recombination). The spectrum of this luminescence was again studied in n-type α-SiC (resistivity 0.1 - 2 ohm.cm) under more favorable conditions. SiC platelets were polished, ground, and etched in parallel to the natural face ⟨0001⟩, and contacts (Al + 50% Si and Si + 1-2% P) were molten to it. The specimens to be measured were located in the focus of an elliptic aluminum-coated mirror in a cryostat. The light reflected from the mirror passed through a monochromator ЗМП -3 (ZMP-3) and reached the ФЭУ -18(FEU-18) and ФЭУ -22(FEU-22) photomulti-

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Spectra of recombination...

pliers which cover a quantum energy range of from 1.2 to 6 ev. Resolution was not poorer than 0.03 ev at 1.2 - 2.0 ev and not poorer than 0.006 ev at higher quantum energies. The current pulses passing through the specimen had a pulse repetition frequency of 37 cps. The spectra were recorded in the form of the energy dependence of the number of photons emitted per unit time and energy interval. The spectrum at 130°K was characterized by two maxima (the first between 1.7 and 1.9 ev, the second between 2.55 and 2.65 ev). In the range of higher quantum energies the position of the curve depended on the current densities. Also temperature changes influenced above all the short-range part of the spectrum. At increased temperatures the recombination radiation proper produces a strong effect. This effect increases with increasing temperature and increasing current. At low temperatures the structureless exponential decrease of the spectrum (Fermi edge) is well distinct. The forbidden band width of the specimens was at 2.87 and 2.89 ev. The Fermi level was by 0.12 - 0.15 ev below the bottom of the conduction band. It is concluded from the fact that the short-wave edge of the spectrum was at energies almost equal to those of the forbidden-band width, that radiation is related to the ex-

Spectra of recombination...

istence of donars. An analysis of the results indicated the probability that the Fermi edge of the spectrum is determined by a degeneracy of usual donor centers. The results of capacitance measurements of the junctions were used to estimate the donor concentration with a value of $\sim 5 \cdot 10^{18}$ cm^{-3} being obtained. The authors thank LETI student M. Lizets for help. There are 3 figures and 12 references: 3 Soviet and 9 non-Soviet. The four most recent references to English-language publications read as follows: R. N. Hall, J. Appl. Phys. 29, 914, 1959; H. C. Chang. Semiconductor Prod., 3, 29, 1960; C. A. A. J. Greebe, W. F. Knippenberg. Phil, Res. Repts., 15, 120, 1960; L. Patrick, W. J. Choyke. J. Appl. Phys., 30, 236, 1959.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut im. V. I. Ul'yanova (Lenina) (Leningrad Electrotechnical Institute imeni V. I. Ul'yanov (Lenin))

SUBMITTED: April 13, 1961

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TOMASHPOL'SKIY, F.G.; KHOLUYANOV, G.F.

Spectra of recombination radiation in fused p - n junctions from SiC. Fiz. tver. tela 3 no.9:2688-2693 S '61. (MIRA 14:9)

1. Leningradskiy elektrotekhnicheskiy institut imeni V.I. Ul'yanova-Lenina.
(Junction transistors) (Silicon carbide)

NOSOV, P. ; TOMASHPOL'SKIY, I.

Are piecework wages necessary in auxiliary workshops and for subsidiary work? Sots.trud.no.11:111-112 N '56. (MLRA 10:1)

1. Nachal'nik shtampo-mekhanicheskogo tsekha Moskovskogo abtozavoda imeni Likhacheva (for Nosov). 2. Nachal'nik planovogo byuro tsekha (for Tomashpol'skiy).
(Moscow--Automobile industry) (Wages)

TOMASHPOL'SKIY, I., prepodavatel'

Talking to students about the December Plenum. Prof.-tekh. obr. 21 no. 4:25 Ap '64. (MIRA 17:5)

1. Dnepropetrovskoye gorodskoye professional'no-tekhnicheskoye uchilishche No. 3.

TOMASHPOL'SKIY, I.A.

New methods for making dies for cold stamping. Mashinostroitel' no.7:33-36 Jl '58. (MIRA 12:10)
(Dies (Metalworking))

LIFSHITS, B.S.; TOMASHPOL'SKIY, I.A.; KAROCHKINA, A.A.; PROTSEROV, S.A.; VASIL'YEVA, A.N.

Intrafactory price lists for tools and equipment. Avt.prom. 29 no.3:1-2 Mr '63. (MIRA 16:3)

1. Moskovskiy avtozavod imeni Likhacheva.
(Industrial equipment)

TOMASHPOL'SKIY, I.A.

Economic efficiency of the carburization by gas in piece production.
Mashinostroitel' no.10:36-37 O '59. (MIRA 13:2)

1.Nachal'nik planovogo byuro shtampo-mekhanicheskogo tsekha Moskovskogo avtomobil'nogo zavoda im. Likhacheva.
(Cementation (Metallurgy))

TOMASHPOL'SKIY, I.A.; CHIROV, A.K.

Economic efficiency of high-speed milling. Mashinostroitel' no.2:42 F '59. (MIRA 12:2)
(Milling machines)

25(5,7) SOV/117-59-2-24/27

AUTHORS: Tomashpol'skiy, I.A., and Chirov, A.K.

TITLE: On the Economic Effectiveness of Quick Milling (Ob ekonomicheskoy effektivnosti skorostnogo frezerovaniya)

PERIODICAL: Mashinostroitel', 1959, Nr 2, p 42 (USSR)

ABSTRACT: The Shtampomekhanicheskiy tsekh (Stampo-Mechanical Shop) of the Moskovskiy avtomobil'nyy zavod (Moscow Auto Plant) imeni Likhachev was preparing a considerable portion of steel cubes for forging stamps, not by planing them, but by quick-milling them on plano-milling machines. This had some advantages, but appeared to cost more, on account of the higher cost of the milling tool. A special test, which included consideration of all the factors involved, has shown, that the cubes processed by quick-milling cost less than those processed by planing.

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AUTHOR: Tomashpol'skiy, I.A. 117-58-7-11/25

TITLE: New Cold-Stamping-Die Production Methods (Novyye metody izgotovleniya shtampov dlya kholodnoy shtampovki)

PERIODICAL: Mashinostroitel', 1958, Nr 7, pp 33-36 (USSR)

ABSTRACT: The article describes the latest changes in design and production technology of cold stamping dies at the Moskovskiy avtomobil'nyy zavod imeni Likhacheva (Moscow Automibile Plant imeni Likhachev). The traditional forgingshave been replaced by cast-steel work sections, with about a 50% economy in metal weight and an elimination of the machining operations needed for forgings. Welding-on the work portions of dies with the cheap alloys "TsN-4" and "TsN-5" (2.75 rubles per kg) developed at TsNIITMASh greatly reduced costs; the "TsN-4" electrodes produce the most durable cutting faces; 32,150 cuts without regrinding, compared with 10,000 to 19,000 cuts with other alloys (Table, p 35). Lightened plates for large and medium size dies, used with underlaid "parallels" to build up the necessary height of stamps, are another practical idea. Fifteen first stamps have been produced for the use of these plates. Wooden "volume templates" or "types" lined inside with low-melting "VUD" alloy

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1. Dies--Stamping--Production

and formed (cast) on the master-models have eliminated the making of the extra stamp for layout of cutting and combined dies. Final fitting of small and complex die parts was previously performed with the use of common fitting presses "Toledo No 7". The operation was laborious and long. The problem was solved by making a new press of an unutilized hydraulic press for cylinder block tightness tests. The remaking of this press (on the suggestion of locksmith A.V. Galankin), required replacement of the hydraulic system by a pneumatic system and cut the work of the fitting operation by 30-35%. The article includes drawings of stamp parts. The described measures have cut the production time for the "Turist" bus, for a new truck, and for the Zavod malolitrazhnykh avtomobiley (Small-Displacement Automobile Plant) There are 9 drawings and 1 table.

TOMASHPOL'SKIY, I.A.

Practice of an economic committee in a shop. Avt.prom. 28 no.11:45-46 N '62. (MIRA 16:1)

1. Moskovskiy avtozavod im. Likhacheva.
(Industrial management)

TOMASHPOL'SKIY, I.A.

Suggested by the integrated brigade. Mashinostoritel' no.1:8-9 Ja '63. (MIRA 16:2)
(Moscow--Automobile industry--Technological innovations)

TOMASHPOL'SKIY, I.V.

Clinical aspects of salmonellosis. Vrach.delo no.11:132-134 N '60.
(MIRA 13:11)

1. II infektsionnaya bol'nitsa g. Zaporozh'ya (Nauchnyy rukovoditel' raboty dotsent Ye.G.Popkova).
(SALMONELLA)

POPKOVA, Ye.G.; TOMASHPOL'SKIY, I.V.

Outbreak of aseptic meningitis caused by the ECHO-13 virus.
Sov.med. 26 no.1:76-79 Ja '63. (MIRA 16:4)

1. Iz kliniki infektsionnykh bolezney Zaporozhskogo instituta usovershenstvovaniya vrachey i 2-y Infektsionnoy bol'nitsy (glavnyy vrach O.R.Radionova).
(MENINGITIS) (ECHO VIRUSES)

TOMASHPOL'SKIY, L.

MOCHALOV, A.; SHAPOVAL, I.; TOMASHPOL'SKIY, L., tekhnolog.

Improving equipment for making lightweight blocks. Stroi. mat. 4 no.3:29-31 Mr '58. (MIRA 11:3)

1. Glavnyy inzhener Krasnopresnenskogo kombinata stroitel'nykh materialov (for Mochalov). 2. Nachal'nik tekhnicheskogo otdela Krasnopresnenskogo kombinata stroitel'nykh materialov (for Shapoval).
(Lightweight concrete)

TOMASHPOL'SKIY, L., kand.ekonom.nauk

The time factor decides. NTO 3 no.8:22-25 Ag '61. (MIRA 14:9)

1. Zaveduyushchiy sektorom ekonomiki promyshlennosti Vsesoyuznogo instituta nauchnoy i tekhnicheskoy informatsii Gosudarstvennogo komiteta Soveta Ministrov SSSR po koordinatsii nauchno-issledovatel'skikh rabot i Akademii nauk SSSR.
(Electric power plants)

LISICHKIN, S.; TOMASHPOL'SKIY, L.

Several methodological problems of the fuel power balance.
Vop. ekon. no.11:48-55 N '62. (MIRA 15:11)
(Power resources)

TOMASHPOL'SKII, L.M.

TOMASHPOL'SKII, L.M. Kuibyshevskaia neft'. [Kuibyshev], kuibysh. Obl. izd-vo, 1947. 92 p.
DLC: TN874.R9T65

SO: LC, Soviet Geography, Part I, 1951, Uncl.

AID P - 331

Subject : USSR/Mining

Card : 1/1

Authors : Udyanskiy, N. Ya. and Tomashpol'skiy, L. M.

Title : Resources in the double bore drilling

Periodical : Neft. Khoz., v. 32, #5, 22-27, My 1954

Abstract : The authors present the analysis of comparative drilling of vertical and inclined single and double holes through various strata. Positive and negative characteristics of double bore drilling are discussed and illustrated in the 4 tables with comparative data.

Institution : None

Submitted : No date

TOMASHPOL'SKIY, L. M.

AID P - 3272

Subject : USSR/Mining

Card 1/1 Pub. 78 - 2/24

Author : Tomashpol'skiy, L. M.

Title : Economy of material resources - important task of the national economy

Periodical : Neft. khoz., v. 33, #9, 7-11, S 1955

Abstract : The author advocates thorough scrutiny of the amount of material and equipment wasted in the oil drilling and processing industry and gives some examples. He makes certain recommendations for greater economy.

Institution : None

Submitted : No date

AID P - 3813

Subject : USSR/Mining

Card 1/1 Pub. 78 - 1/25

Authors : Karyagin, I. D., L. M. Tomashpol'skiy and M. D. Kotlyar

Title : The question of planning the organization of drilling work production. (In the order of discussion)

Periodical : Neft. khoz., v. 33, #11, 1-10, N 1955

Abstract : The authors analyse different phases relating to the well drilling works and indicate shortcomings and lack of proper coordination, planning and organization. This article is one among many published in this journal in a general discussion on the subject of achieving better efficiency in drilling works through better planning, organization, adoption of more modern equipment and technical methods, mechanization of work and automation.

Institution : Central Bureau of Work Standards (TsBNT)

Submitted : No date

KARYAGIN, Ivan Dmitrieyvich; TOMASHPOL'SKIY, Leonid Markovich; KOTLYAR, Mikhail Davydovich; NURSHANOV, V.A., redaktor; MORGUNOVA, G.V., vedushchiy redaktor; ERDENKO, V.S., tekhnicheskiy redaktor

[Planning over-all organization of boring work] Proektirovanie kompleksnoi organizatsii burovykh rabot. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1956. 99 p. (Oil well drilling) (MLRA 9:12)

ZALKIN, S.L.; TOMASHPOL'SKIY, L.M.

Economic effectiveness of two-column group drilling. Neft.khoz.33 [i.e.34] no.9:8-15 S '56. (MLRA 9:10)
(Oil well drilling)

TOMASHPOL'SKIY, L.M.; ZHUKOVSKIY, Ye.S.

Important factor in the systematic exploitation of oil fields. (MLRA 10:8)
Neft. khoz. 34 no.12:7-13 D '56.
(Petroleum industry)

TOMASHPOL'SKIY, L.M.

UDYANSKIY, Nikolay Yakovlevich; PALAY, Polikarp Avtonomovich; TOMASHPOL'SKIY, Leonid Markovich; STRIZHOV, N.I., redaktor; BEKMAN, Yu.K., vedushchiy redaktor; MUKHINA, E.A., tekhnicheskiy redaktor

[Technique and technology of boring oil and gas wells in the sixth five-year plan] Tekhnika i tekhnologiia bureniia neftianykh i gazovykh skvazhin v shestoi piatiletke. Moskva, Gos.nauchno-tekhn. izd-vo neft.i gorno-toplivnoi lit-ry, 1957. 127 p. (MLRA 10:7)
(Oil well drilling) (Gas, Natural)

ZALKIN, S.L.; TOMASHPOL'SKIY, L.M.; TIMOFEYEV, N.S., redaktor; DUBROVINA, N.D., [illegible] redaktor; MUKHINA, E.A., tekhnicheskiy redaktor

[Two-column group drilling of wells; a textbook for the lecturer] Dvukhstvol'noe kustovoe burenie skvazhin; v pomoshch' lektoru. Pod red. N.S.Timofeeva. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1957. 86 p. (MLRA 10:10)
(Oil well drilling)

SOV/93-58-8-5/15

AUTHOR: Tagiyev, E. I.; Dunayev, F. F.; Tomashpol'skiy, L. M.; Sereda, N. G.; and Mordvin, L. N.

TITLE: Increased Efficiency Resulting From the Drilling of Clusters of Multiple Oil Wells Through Level Type Formations (K voprosu ob effektivnosti sploshnogo razburivaniya mestorozhdeniy ravninnogo tipa kustami mnogostvol'nykh skvazhin)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 8, pp. 16-23 (USSR)

ABSTRACT: The All-Union conference on dual well drilling and inclined well operation, called by the Gosplan of the USSR, started in January and continued through February 1958. The conference noted that the extension of multiple well drilling in the Soviet Union is of great importance since this type of well completion will reduce capital investment and the consumption of metal and labor. Slepyan, Milovidov, Shandin, Ovanesov, and Mezhlumov, representing the Councils of the National Economy of the Bashkir ASSR, Azerbaydzhan SSR, Kuybyshev Oblast, and Stalingrad Oblast reported that they are

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preparing for expansion of the multiple well drilling method in their respective regions. The authors state that the increased importance of multiple well drilling calls for a more thorough analysis of the problems raised by M. G. Osipov and A. A. Kortatstsi in their article published in Neftyanoye khozyaystvo, 1957, Nr 8. The authors also note that the effect of multiple well drilling through level type formations had been studied at the Moskovskiy neftyanoy institut im. akad. I. M. Gubkina (Moscow Petroleum Institute im. Acad. I. M. Gubkin) by V. P. Banatov, G. I. Zhukova, L. G. Kasatkina, and N. L. Kolyubakin under the guidance of E. I. Tagiyev and F. F. Dunayev. Drilling data provided by the 'Al'met'yevburneft' and Tatburneft' of the Tatar ASSR show that the multiple well drilling method produces better results than the vertical well drilling method (Tables 1-3). Fig. 1 presents a well distribution scheme for multiple well drilling at the Yuzhno-Romashkino oilfield of the Tatar ASSR. This scheme will be used for oil well drilling during the Sixth Five Year Plan. Tables 4-6 show that the drilling of multiple

Increased Efficiency Resulting (Cont.)

wells according to this scheme of well distribution will lead to a reduction in capital investment and to a desirable decrease in time and labor consumption. The authors conclude that: 1) drilling clusters of dual wells through level type formations will reduce capital investment, labor and metal consumption, 2) the accumulated data on dual well drilling and on the operation of clusters of inclined wells a level type formations make it possible to recommend an expansion of this type of drilling, and 3) wide application of dual well drilling depends on the development of special drilling and operating equipment, and on the solution of individual technological problems. There are 6 tables and 1 figure.

1. Petroleum--Production 2. Well drilling--Costs

Card 3/3

11(0) SOV/93-58-10-16/19

AUTHOR: Gal'person, Ye., and Tomashpol'skiy, L. M.

TITLE: From the State of a "Petroleum Cemetery" to a Highly Developed Petroleum Industry (Ot "neftyanogo kladbishcha" do vysokorazvitoy neftyanoy industrii)

PERIODICAL: Neftyanoye khozyaystvo, 1958, 36, Nr 10, pp 68-69 (USSR)

ABSTRACT: This is a review of S.M. Lisichkin's book "Ocherki razvitiya neftedobyvayushchey promyshlennosti SSSR" (Outlines of the Development of the Petroleum Production Industry in the USSR), published by the AN SSSR in 1958. This book is a continuation of the author's study of the Russian petroleum industry prior to the October Revolution. The author traces the development of the Soviet petroleum industry from 1920, when according to S.M. Kirov it was as dead as a "cemetery", to the present stage of development.

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TOMASHPOL'SKIY, L.M.

Efficiency of electric drilling. Azerb. neft. khoz. 37 no.9:46-48 S '58. (MIRA 11:12)

(Oil well drilling)